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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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CHICAGO, IL 60606

EXAMINER

KOVALICK, VINCENT E

ART UNIT	PAPER NUMBER
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2673

25

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/255,605

Applicant(s)

YAMAZAKI ET AL.

Examiner

Vincent E Kovalick

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Response to Amendment

1. This Office Action is in response to Applicant's Amendment E – After Final, dated January 20, 2004 in response to USPTO Office Action dated July 23, 2003.

The Amendments to claims 1, 7, 13 and 22-26 have been considered and entered in the record.

Applicant's arguments/remarks relative to claims 1, 7, 13 and 22-26 relate to limitation in claims 1, 7, 13 and 22-26 that were added in said amendment dated January 20, 2004. Regarding Applicant's remarks relative to said claims "a controller transmits a first information to at least one of flat panel displays to display the first information, and a TV tuner transmits an image second information different for the first information to at least one to the flat panel display" these added limitations to said claims are taught by Yamauchi et al. (USP 5,276,47120; col. 4, lines 9-18 and Fig. 4) as indicated in item 3 hereinbelow.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 1, 7, 13, and 19-26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schoolman (U.S. Patent No. 5,281,957) taken with Yamauchi et al. (USP 5,276,471) in view of Catallo et al. (U.S. Patent No. 5,867,817) taken with Spitzer (U. S. Patent No. 6,349,001).

Relative to claims 1, 7, 13 and 22-26 Schoolman **teaches** a portable computer and head mounted display (col. 2, lines 63-68; col. 3, lines 1-33 and Figs. 1 and 7). Schoolman further **teaches** an information processing device comprising: a display device having flat panel displays for right and left eyes mounted on the head of a user (col. 3, lines 1-4 and Fig. 7);

Schoolman **does not teach** a controller connected to said display device, a first information is transmitted from said controller to at least one of said flat panel displays to display said first information; or an input operation device connected to said controller; and a camera, wherein said controller transmits a signal in the form of an electric wave to said display device and wherein said flat panel displays are capable of displaying a plurality of pieces of information at a time, and wherein said display device, said controller, said input operation device and said camera are adapted to be used by the same user, and wherein an image second information different from said first information is transmitted from a TV tuner to said at least one of said flat panel displays to display said image second information; or a pick-up device which converts at least images of and input operation device and a hand of a user into electrical signals and supplies said electrical signals to said controller.

Schoolman teaches a head mounted display.

Yamauchi et al. **teaches** an image displaying device capable of being applied as a glass type displaying apparatus (col. 1, lines 30-67 and col. 2, lines 1-10); Yamauchi et al. further **teaches** a controller connected to said display device, a first information is transmitted from said controller to at least one of said flat panel displays to display said first information (col. 4, lines 9-18 and Fig. 4); and wherein an image second information different from said first

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information is transmitted from a TV tuner to said at least one of said flat panel displays to display said image second information (col. 4, lines 9-18 and Fig. 4); still further Yamauchi et al. **teaches** an input operation device connected to said controller (col. 4, lines 9-18 and Fig. 4).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Schoolman the feature as taught by Yamauchi et al. in order to facilitate displaying images from two different sources at the two different LCD's housed in the head mounted unit.

Schoolman taken with Yamauchi et al. **does not teach** ; said information processing device comprising and a camera; or said controller transmits a signal in the form of an electric wave to said display device and wherein said flat panel displays are capable of displaying a plurality of pieces of information at a time; or a pick-up device which converts at least images of and input operation device and a hand of a user into electrical signals and supplies said electrical signals to said controller.

Schoolman taken with Yamauchi et al. teaches a head mounted display comprising separate LCD's for each of the right and left eyes.

Catallo et al. **teaches** a speech recognition manager (col. 2, lines 15-67). Catallo et al. further **teaches** a controller connected to said display device (col. 3, lines 55-67 and col. 4, lines 1-8); and wherein said controller transmits a signal in the form of an electric wave to said display device and wherein said flat panel displays are capable of displaying a plurality of pieces of information at a time (col. 3, lines 53-67 and col. 4, lines 1-8).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Schoolmen taken with Yamauchi et al. the feature as taught by Catallo et al. in order to communicate with other system units using infra-red wireless communication technology or radio wireless communication technology (col. 4, lines 2-8, Catallo et al.).

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Schoolman taken with Yamauchi et al. in view of Catallo et al. **does not teach** said information processing device comprising a camera, and wherein said display device, said controller, said input operation device and said camera are adapted to be used by the same user; or a pick-up device which converts at least images of and input operation device and a hand of a user into electrical signals and supplies said electrical signals to said controller.

Schoolman taken with Yamauchi et al. in view of Catallo et al. teaches a head mounted display comprising separate LCD's for each of the right and left eyes with the means to receive wireless input signals.

Spitzer **teaches** an eyeglass interface system (col. 1, lines 56-67; col. 2, lines 1-67; col. 3, lines 1-21 and Fig. 1). Spitzer further **teaches** a camera mounted in a head mounted device (col. 4, lines 12-15 and Fig. 1), and wherein said display device, said controller, said input operation device and said camera are adapted to be used by the same user (col. 2, lines 59-65 and col. 4, lines 21-23); still further, Spitzer **teaches** an image pick-up device (col. 4, lines 12-15 and Fig. 1) which converts at least images of an input operation device and a hand of a user into electrical signals and supplies said electrical signal to a display controller (col. 2, lines 59-65).

Further, it would have been obvious to a person of ordinary skill in the art at the time of the invention that the camera (pick-up device) in the system as taught by Spitzer could be oriented such that the field of view would take in a user input device, and whatever is in the field of view of the camera, including the hand of the user, would be included in the image that is transmitted to a display device.

In addition it is well understood in the art and in common practice, in active matrix flat panel display devices, for each pixels to have an associated thin film transistor (TFT) and for TFT's to be incorporated in pixel driving circuits and to have these associated logic elements implemented on the same substrate.

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It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Schoolman taken with Yamauchi et al. in view of Catallo et al. the features as taught by Spitzer in order to put all the elements of the system, e.g. the display device, controller, input operation device and said camera at the disposal of the same system user. Regarding claims 19 and 21, Spitzer further **teaches** said information processing device wherein a camera (pick-up device) is provided apart from said display device (col. 2 lines 48-51).

Relative to claim 20, Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer **does not specifically teach** a display device wherein said driving circuit comprises a source-side driving circuit; said step being in common practice in driving flat panel liquid crystal display devices.

Because said feature is in common practice and well known in the art, it would have been obvious to a person of ordinary skill in the art at the time of the invention to include said feature in the design as taught by Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer in order to have in place the circuitry necessary to drive and scanning and data lines of the flat panel display.

4. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer as applied to claim 1 in item 3 hereinabove, and further in view of Funai et al. (U. S. Patent No. 6,162,667). Regarding claim 2, Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer **does not teach** channel formation regions of TFTs connected to pixel electrodes of the said flat panel displays of said display device are constituted by a semiconductor thin film formed by a collection of a plurality of bar-shaped or planar bar-shaped crystals formed on an insulting surface.

Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer teaches

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a head mounted display comprising separate LCD's for each of the right and left eyes with the means to receive wireless input signals, with said a camera at the disposal of the user.

Funai et al. **teaches** a method for fabricating thin film transistors (col. 3, liens 40-67; col. 4, lines 1-67; col. 6, lines 1-67; col. 7, lines 1-67 and col. 8, lines 1-43).

Funai et al. further **teaches** channel formation regions of TFTs connected to pixel electrodes of the said flat panel displays of said display device are constituted by a semiconductor thin film formed by a collection of a plurality of bar-shaped or planar bar-shaped crystals formed on an insulting surface (col. 1, lines 8-14; col. 4, lines 58-64 and col. 5, lines 40-56).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to provide to the device as taught Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer the feature as taught by Funai et al. in that it facilitates the fabrication of an active matrix type liquid crystal display device.

Regarding claim 4, Funai et al. further **teaches** an information processing device wherein 90 % or more of crystal lattices at grain boundaries of a channel formation regions have continuity (col. 12, lines 60-65). Though Funai et al. does not specifically cite 90 % he does teach "uniformity over a large area".

5. Claims 3, 9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer in view of Funai et al. as applied to claim 2, 8 and 14 respectively in items 4 and 8 and further in view of Oka et al. (U. S. Patent No. 6,235,563).

Relative to claim 3, 9 and 15, Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer in view of Funai et al. **does not teach** an information processing device wherein the plane of said channel formation regions is oriented substantially in a <110> direction.

Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer teaches

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a head mounted display comprising separate LCD's for each of the right and left eyes with the means to receive wireless input signals, with said a camera at the disposal of the user.

Oka et al. **teaches** semiconductor devices and method of manufacturing the same (col. 3, lines 18-65 and col. 4, lines 1-58); Oka et al. further **teaches** an information processing device wherein the plane of said channel formation regions is oriented substantially in a <110> direction (col. 4, lines 64-67; col. 5, line 1 and col. 11 lines 34-40).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use in the device as taught by Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer in view of Funai et al. the feature as taught by Oka et al of using TFT's comprising a crystal gain having a <110> plane orientation to optimize field effect mobility.

6. Claim 5, 11 and 17 are rejected under 35 U. S. C. 103 (a) as being unpatentable over Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer as applied to claims 1, 7 and 13 respectively in items 3 herein above, and further in view of Intriligator (U.S. Patent No. 6,163,323) taken with Lewis (U.S. Patent No. 6,040,812).

Relative to claims 5, 11 and 17, Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer **does not teach** flat panel displays comprising a display device on which one screen is written at frequencies in the range from 30 Hz to 180 Hz and on which screen display is carried out with the polarity of the voltage applied to the pixel electrodes inverted for each screen.

Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer teaches a head mounted display comprising separate LCD's for each of the right and left eyes with the means to receive wireless input signals, with said a camera at the disposal of the user

Intriligator **teaches** a self-synchronizing animation (col. 1, lines 6-9 and col. 2, lines 27-40).

Intriligator further teaches a display device on which one screen is written at frequencies in the range from 30 Hz to 180 Hz (col. 3, lines 24-37).

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It would have been obvious to a person of ordinary skill in the art at the time of the invention provide to the device as taught by Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer the feature as taught by Intriligator in order to set a frequency range that includes a standard screen write frequency of 60 Hz.

Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer in view of Intriligator **does not teach** flat panel displays comprising a display device on which screen display is carried out with the polarity of the voltage applied to the pixel electrodes inverted for each screen.

Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer taken with Intriligator teaches a head mounted display comprising separate LCD's for each of the right and left eyes with the means to receive wireless input signals, with said a camera at the disposal of the user.

Lewis **teaches** an active matrix display with integrated drive circuitry (col. 1, lines 6-8 and 54-65; col. 2, lines 1- 16). Lewis further **teaches** display device on which screen display is carried out with the polarity of the voltage applied to the pixel electrodes inverted for each screen (col. 13, lines 23-34).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer in view of Intriligator the feature as taught by Lewis in order to provide a display refresh rate that is consistent with liquid crystal display technology and to further provide a voltage inversion technique in order to include a noise control feature in the matrix display devices.

7. Claims 6, 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable

Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer as applied to

claims 1, 7 and 13 respectively in item 3 herein above, and further in view of Nishi et al. (U.S. Patent No. 5,541,747).

Regarding claims 6, 12 and 18 Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer **does not teach** a flat panel display device which is a liquid crystal display using a liquid crystal material which is antiferroelectric liquid crystal or ferroelectric liquid crystals substantially having no threshold.

Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer teaches a head mounted display comprising separate LCD's for each of the right and left eyes with the means to receive wireless input signals, with said a camera at the disposal of the user.

Nishi et al. **teaches** an electro-optical device utilizing a liquid crystal having a spontaneous polarization (col. 1, lines 7-26; col. 6, lines 11-67; col. 7, lines 1-36 and Abstract). Nishi et al. further **teaches** a flat panel display device which is a liquid crystal display using a liquid crystal material which is antiferroelectric liquid crystals or ferroelectric liquid crystals substantially having no threshold (col. 11, lines 5-16 and Abstract).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer. the feature as taught by Nishi et al. in order to enable the liquid crystal material in switching between different states.

8. Claims 8, 10, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer. as applied to claim 7 and 13 in item 3 hereinabove, and further in view of Funai et al.

Regarding claims 8 and 14, Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer **does not teach** channel formation regions of TFTs connected to pixel electrodes of the said flat panel displays of said display device being constituted by a semiconductor thin film

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formed by a collection of a plurality of bar-shaped or planar bar-shaped crystals formed on an insulting surface.

Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer teaches a head mounted display comprising separate LCD's for each of the right and left eyes with the means to receive wireless input signals, with said a camera at the disposal of the user.

Funai et al. **teaches** a method for fabricating thin film transistors (col. 3, lines 40-67; col. 4, lines 1-57 and col. 5, lines 1-60); Funai et al. **teaches** channel formation regions of TFTs connected to pixel electrodes of the said flat panel displays of said display device are constituted by a semiconductor thin film formed by a collection of a plurality of bar-shaped or planar bar-shaped crystals formed on an insulting surface (col. 1, lines 8-14; col. 4, lines 58-64 and col. 5, lines 40-56).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Schoolman taken with Yamauchi et al. in view of Catallo et al. taken with Spitzer. the feature as taught by Funai et al. in that it facilitates the fabrication of an active matrix type liquid crystal display device.

Relative to claims 10 and 16, Funai et al. **further** teaches an information processing device wherein 90 % or more of crystal lattices at grain boundaries of a channel formation regions have continuity (col. 12, lines 60-65). Though Funai et al. does not specifically recite 90 % he does teach "uniformity over a large area".

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Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent No.	6,072,445	Spitzer et al.
U. S. Patent No.	6,043,800	Spitzer et al.
U. S. Patent No.	6,011,653	Karasawa
U. S. Patent No.	5,971,538	Heffner

Responses

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent E Kovalick whose telephone number is 703 306-3020.

The examiner can normally be reached on Monday-Thursday 7:30- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703 305-4938. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 306-0377.



Vincent E. Kovalick
4/19/04



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